

We claim:

- 1 1. A method for determination of the length of objects in traffic, especially  
2 passenger cars, trucks, buses, motorbikes, bicycles and pedestrians, comprising  
3 the steps of:  
4 - emitting radar signals from a vehicle which are reflected by an object  
5 which is to be measured,  
6 - receiving the reflected radar signals in the vehicle,  
7 - evaluating the frequency spectra of the reflected radar signals, and  
8 - determining the reflection peaks contained in the frequency spectra,  
9 - determining the width of the reflection peaks, and  
10 - determining the length of the object by means of the determined width.
- 1 2. The method according to Claim 1, wherein from the vehicle a radar chirp is  
2 emitted in a continuous wave radar or a pulse is emitted in a pulse radar  
3 measurement method or a frequency shift keying (FSK) transmission signal is  
4 emitted as a radar transmission signal.
- 1 3. The method according to Claim 1, wherein the length of the object is  
2 determined from the range resolution  $\Delta R$  of the radar chirp and the width of  
3 the reflection peaks  $\Delta \kappa$  essentially according to the formula  $L = \Delta R \cdot \Delta \kappa$ .
- 1 4. The method according to Claim 1, wherein the width of the reflection peaks is  
2 determined at a specified amplitude.
- 1 5. The method according to Claim 1, wherein in a CW radar the frequency  
2 spectra of the reflected radar signals are determined by Fast Fourier  
3 Transformation, or in a pulse radar the number of range gates, whose reception  
4 power are above the decision threshold are measured.

- 1    6.    The method according to Claim 1, wherein the radar signals are generated by  
2        means of linear frequency modulated continuous wave radar sensors and/or  
3        pulse radar sensors and/or FSK-modulated sensors.
- 1    7.    The method according to Claim 1, wherein the weight of the object is  
2        estimated, at least by means of the determined length of the object.
- 1    8.    The method according to Claim 7, wherein the determined weight of the object  
2        is made available to driver assistance systems.
- 1    9.    The method according to Claim 7, wherein by means of the determined weight  
2        or length of the object, interventions in the driving dynamics or protection  
3        devices, especially occupant protection devices or pedestrian protection  
4        devices, are controlled.
- 1    10.   The method according to Claim 7, wherein an estimated collision severity is  
2        determined by means of the determined weight of the object.
- 1    11.   The method according to Claim 1, wherein an object contour of the object is  
2        determined with an image processing camera system and/or a contour-  
3        measuring laser sensor.
- 1    12.   The method according to Claim 11, wherein the determined object contours are  
2        used to refine, adjust and/or verify additional vehicle data and/or for  
3        interpretation of the traffic scene closer to reality.

- 1 13. A device for determination of the length of an object in traffic, comprising:  
2 - a radar sensor that transmits and receives radar signals,  
3 - a frequency analysis device that determines a frequency spectrum of the  
4 received radar signals,  
5 - a detection device that determines reflection peaks contained in the  
6 frequency spectrum, wherein the detection device is designed to determine  
7 the width of the reflection peaks, and  
8 - a length calculation device that calculates the length of the object being  
9 measured, partly from the width of the reflection peaks.
- 1 14. The device according to Claim 13, wherein the radar sensor is designed to emit  
2 a radar chirp in a continuous wave radar or a pulse in a pulse radar  
3 measurement method or a frequency shift keying (FSK) transmission signal as  
4 a radar transmission signal.
- 1 15. The device according to Claim 13, wherein the length calculation device  
2 determines the length of the object from the range resolution  $\Delta R$  of the radar  
3 chirp and the width of the reflection peaks  $\Delta \kappa$  essentially according to the  
4 formula  $L = \Delta R \cdot \Delta \kappa$ .
- 1 16. The device according to Claim 13, wherein the radar sensor is a CW radar and  
2 the frequency analysis device operates with a Fast Fourier Transformation.
- 1 17. The device according to Claim 13, wherein the radar sensor is a pulse radar.
- 1 18. The device according to Claim 13, wherein the radar signals are generated by  
2 means of linear frequency modulated continuous wave radar sensors and/or  
3 pulse radar sensors and/or FSK-modulated sensors.
- 1 19. The device according to Claim 13, wherein the weight of the object is  
2 estimated, at least by means of the determined length of the object.

- 1 20. The device according to Claim 19, wherein the determined weight of the object  
2 is made available to driver assistance systems.
- 1 21. The device according to Claim 19, further comprising means to control  
2 interventions in the driving dynamics or protection devices, especially  
3 occupant protection devices or pedestrian protection devices by means of the  
4 determined weight or length of the object.
- 1 22. The device according to Claim 19, further comprising means for determining  
2 an estimated collision severity by means of the determined weight of the  
3 object.
- 1 23. The device according to Claim 13, further comprising an image processing  
2 camera system and/or a contour-measuring laser sensor to determine an object  
3 contour.